

PATENT CLAIMS

1. A method for time synchronization of units (2) in a system (1) which has a timebase unit (1) which is connected via a deterministic communications network (3) to the units (2), with the timebase unit (1) transmitting protocol packets (P) via the deterministic communications network (3) to the units (2) at a defined time interval (t), which units (2) receive the protocol packets (2) and use the time interval (t) between the received protocol packets (P) for at least approximately identical clocking of the units (2).
2. The method as claimed in claim 1, characterized in that the protocol packets are transmitted at a time interval which varies by 1 μ s at most.
3. The method as claimed in claim 1, characterized in that the protocol packets are transmitted at a time interval of 10^{-x} seconds, where x is a natural number including 0.
4. The method as claimed in claim 3, characterized in that $x = 0$.
5. The method as claimed in claim 3, characterized in that protocols are transmitted with a length of less than 10^{-x} seconds.
6. The method as claimed in claim 1, characterized in that the timebase establishes the defined time interval on the basis of GPS time.
7. The method as claimed in claim 1, characterized in that the protocol packets contain information about local time.
8. A system (A) having a number of units (2) and a time-synchronization apparatus, characterized in that

the time-synchronization apparatus has a timebase unit (1), in that each of the units (2) is connected to the timebase unit (1) via a deterministic communications network (3), in that the timebase unit (1) has means
5 for transmitting protocol packets (P) via the communications network (3) at a constant time interval (t), and in that each unit (2) has means for receiving these protocol packets (P) and means for at least approximately identical clocking of each unit (2) based
10 on the constant time interval (t).

9. The system as claimed in claim 8, characterized in that the timebase has a GPS receiver.

15 10. The system as claimed in claim 8, characterized in that the communications network is a fieldbus system, a DOL network or a wire-free network.

20 11. The system as claimed in claim 8, characterized in that said system is a switchgear assembly or an automation system in the high- or medium-voltage range.